We study a subset of a parabolic quotient in a simply-laced Weyl group $W$—stable under an automorphism $\sigma$—which we call the balanced parabolic quotient. This subset relates the branching rule for a Levi subalgebra, Demazure modules, and $\sigma$-invariant weight spaces in $\sigma$-stable simple modules for the corresponding Lie algebra; and its Hasse diagram under the Bruhat order is a forest with a remarkable self-similarity property. We characterize an element of a balanced quotient on the level of the root system of $W$, and find that the subalgebras of the Borel associated with these elements decompose into the direct sum of two subalgebras: one contained in the Borel for a Levi subalgebra, and another consisting of $\sigma$-invariants. (Received February 15, 2015)